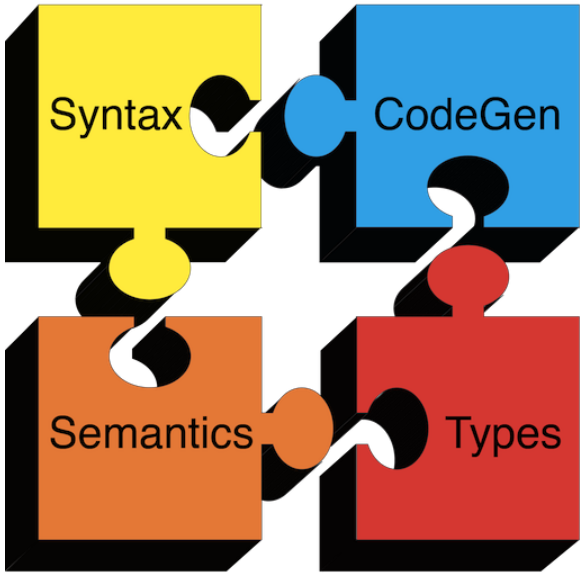

Compilers

Conservative Collection

Conservative Collection

- Garbage collection relies on being able to find all reachable objects
  - and it needs to find all pointers in an object

- In C or C++ it is impossible to identify the contents of objects in memory
  - E.g., a sequence of two memory words might be
    - A list cell (with data and next fields)
    - A binary tree node (with left and right fields)
  - Thus we cannot tell where all the pointers are

Conservative Collection

- But it is Ok to be conservative:
  - if a memory word looks like a pointer it is considered a pointer
    - it must be aligned
    - it must point to a valid address in the data segment
  - all such pointers are followed and we overestimate the set of reachable objects

- But we still cannot move objects because we cannot update pointers to them
  - what if what we thought to be a pointer is actually an account number?